

CLAIMS

1. A method for producing a filled skutterudite-based alloy, comprising:

melting alloy raw material comprising a rare earth metal R that is at least one species selected from among La, Ce, Pr, Nd, Sm, Eu and Yb, a transition metal T that is at least one species selected from among Fe, Co, Ni, Os, Ru, Pd, Pt and Ag, and metallic antimony Sb to form a melt; and

rapidly quenching the melt through strip casting to form a solidified product.

2. The method according to claim 1, wherein the alloy raw material is melted at a temperature of 800 to 1,800°C, and the melt is rapidly quenched at a cooling rate of 10^2 to 10^4 °C/second, as measured within a range of a temperature of the melt to 800°C.

3. The method according to claim 1 or claim 2, wherein the alloy raw material is melted in an inert gas atmosphere at a pressure higher than atmospheric pressure of 0.1 MPa and not higher than 0.2 Mpa.

4. The method according to any one of claims 1 to 3, wherein the solidified product comprises alloy strips having a thickness of 0.1 to 2.0 mm.

5. A filled skutterudite-based alloy produced through the method according to any one of claims 1 to 4, that contains a filled skutterudite phase in an amount of at least 95 mass%.

6. The filled skutterudite-based alloy according to claim 5, wherein it contains a filled skutterudite phase in an amount of at least 95 vol.% and further contains a phase, other than the filled skutterudite phase, having a maximum diameter of 10 μm or less.

7. The filled skutterudite-based alloy according to claim 5 or claim 6, wherein it contains oxygen, nitrogen and carbon in a total amount of 0.2 mass% or less.

8. A thermoelectric conversion element fabricated using the filled skutterudite-based alloy according to any one of claims 5 to 7.